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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
POE, MICHAEL I	

ART UNIT	PAPER NUMBER
1732	9

DATE MAILED: 04/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/469,972	DENKER ET AL.	
	Examiner	Art Unit	
	Michael I. Poe	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 November 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-90* is/are pending in the application.

4a) Of the above claim(s) *12,19,36,43 and 49-70* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-18,20-42,44-48 and 71-90* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 December 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). *5,6*
4) ☒ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Species A, Subspecies A2, and Subspecies A22 in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 12, 19, 36, 43, 49-70 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 17, 18, 20-25, 41, 42, 44-48 and 81-90 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 17, 41 and 81 recite that the film comprises a vinyl polymer. Claims 20, 44 and 87, which are dependent on claims 17, 41 and 81, recite that the film comprises polypropylene. As such, it appears based on the applicant's claims that polypropylene is a species of the vinyl polymer genies. However, these claimed relationships of claims 17, 20, 41, 44, 81 and 87 are confusing because one of ordinary

skill in the art would not recognize polypropylene is not a vinyl polymer. For the purpose of this Office action, the examiner has assumed that polypropylene is a species of the vinyl polymer genies.

Claim 20 is currently dependent on claim 19. This dependency is confusing because it would be unclear to one of ordinary skill in the art how a polypropylene film can also be a polyethylene film. It appears that the applicant intended for claim 20 to be dependent on claim 18 rather than claim 19 based on claims 42-44. Therefore, for the purpose of this Office action, the examiner has assumed that claim 20 is dependent on claim 18.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-4, 6-11, 13-18, 20-24, 26, 28-30, 32-35, 37-42, 44-47, 71, 73-79, 81 and 83-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,551,546 (Gosper et al.) in view of U.S. Patent No. 4,853,602 (Hommes et al.).

Claims 1-4, 7, 10, 11, 13, 17, 18, 20, 26, 28-30, 33, 35, 37, 41, 42, 44, 71, 73, 74, 77, 81, 83, 84 and 87

Gosper et al. teach the basic claimed process including a method for the production of biaxially oriented polypropylene film (a method of stretching a polymeric film or a pre-crystallized polymeric film or a vinyl polymer; the film comprises a thermoplastic film; the film comprises a semi-crystalline film; the film comprises a vinyl polymer; the film comprises a polyolefin; the film comprises polypropylene) including extruding a polypropylene melt through a flat film die into a spaced pair of rotating nip rollers, pass the polypropylene through the nip rollers into a quench bath whereby the base film is formed, preheating the base film to an orientation temperature (heating the polymeric film or the center and edge portions of the polymeric film to a sufficiently high temperature to allow a significant amount of stretching without breaking), stretching the film in a transverse direction by gripping the film at each edge (grasping the film

with a plurality of clips along the opposing edges of the film and propelling the clips to thereby stretch the film), subsequently passing the transversely stretched film to a longitudinal direction orienter and therein stretching the film in a longitudinal direction while restraining its edges to provide a biaxially oriented film (biaxially stretching the film), and finally heat-setting the biaxially oriented film to impart thermal stability thereto wherein heat-setting by annealing comprises passing the biaxially oriented film through an annealer including a first zone having a temperature of 344°F, a second zone having a temperature of 297°F, and a third zone which is not heated and functions as a cooling zone with cool air being circulated there through (actively imparting a machine direction cooling gradient to at least a portion of the width of the stretched film; cooling or actively cooling the center portion of the film; cooling or actively cooling substantially the entire width of the film) (title; column 1, lines 13-26; column 3, lines 20-60; column 9, line 71 – column 10, line 44). Note that the machine direction cooling gradient imparted to the film in the process of Gosper et al. would inherently improve the uniformity of the spacing of the clips as claimed. Gosper et al. further teach that the edges of the film should be maintained at a temperature at least below that of the intermediate film portion (column 3, lines 20-60) (cooling the opposed edge portions of the film; at the onset of stretching, maintaining the edge portions of the film no hotter than the center portion of the film).

Although Gosper et al. teach the basic claimed process, Gosper et al. do not specifically teach that the plurality of clips includes driven clips and idler clips with at least one idler clip between respective pairs of driven clips. However, Hommes et al. teach a method of biaxially drawing plastic films including biaxially stretching the film in a tenter frame by gripping the film with tenter clips (grasping the film with a plurality of clips along the opposed edges of the film and propelling the clips to thereby stretch the film) wherein one or more idler clips are placed between each of the tenter clips (wherein the plurality of clips include driven clips and idler clips, with at least one idler clip between respective pairs of driven clips; there are at least two idler clips between each respective pair of driven clips) (column 22, line 48 – column 23, line 23). It would have been obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to provide idler clips between the driven clips in the process of Gosper et al. as taught by Hommes et al. to minimize film edge scalloping.

Claims 6, 32, 75 and 85

The discussion of Gosper et al. and Hommes et al. as applied to claims 1, 26, 71 and 81 above applies herein.

As discussed above with regard to claims 1, 26, 71 and 81, Gosper et al. teach stretching the film in a transverse direction by gripping the film at each edge (propelling the clips through a stretch section in which the film is stretched), subsequently passing the transversely stretched film to a longitudinal direction orienter and therein stretching the film in a longitudinal direction while restraining its edges to provide a biaxially oriented film, and finally heat-setting the biaxially oriented film to impart thermal stability thereto (subsequently through a post-stretch treatment section) wherein heat-setting by annealing comprises passing the biaxially oriented film through an annealer including a first zone having a temperature of 344^{O}F, a second zone having a temperature of 297^{O}F, and a third zone which is not heated and functions as a cooling zone with cool air being circulated there through [wherein step b) is performed in at least one of the stretch section and the treatment section].

Claims 8, 34, 76 and 86

The discussion of Gosper et al. and Hommes et al. as applied to claims 7, 33, 71 and 81 above applies herein.

Gosper et al. teach sequential biaxially stretching the film in tenter frames, and therefore they do not teach simultaneous biaxially stretching by propelling the clips as varying speeds in the machine direction along clip guide means that diverge in the transverse direction. However, Hommes et al. teach a method of biaxially drawing plastic films including a web of material is fed to a tenter frame, tenter clips on opposed pairs of carriages grasp sequentially successive areas along opposite edges of the film and propel the film at a first constant speed through a transport section, and then tracks diverge thereby drawing the film transversely while at the same time the opposed pairs of carriages are individually accelerated cause them to separate from adjacent pairs and simultaneously stretch the film longitudinal in the drawing section (simultaneously biaxially stretching the film by propelling the clips at varying speeds in the machine direction along clip guide means that diverge in the transverse direction) (column 22, line 48 – column 23, line 23). It would have been obvious to one of ordinary skill in the art at the time the

invention was made and one of ordinary skill would have been motivated to use the simultaneous biaxial stretching process taught in Hommes et al. in place of the sequential biaxial stretching process in the process of Gosper et al. to increase the speed with which the film could be biaxially stretched to the desired parameters.

Claims 9, 21, 22, 45, 78 and 88

The discussion of Gosper et al. and Hommes et al. as applied to claims 8, 20, 44 and 77 above and as applied to claim 89 below applies herein.

Gosper et al. further teach that the base polypropylene sheet is stretched at least 600% in the transverse direction and at least 400% lengthwise (stretching the film to a final stretch ratio of at least 2:1 in the machine direction and at least 2:1 in the transverse direction) (column 3, lines 20-60). As such, Gosper et al. further teach that the base polypropylene sheet is stretched at least 24 times in area (stretching the film to a final area stretch ratio of at least 16:1; stretching the film to a final area stretching ratio of from 25:1 to 100:1).

Claims 14-16 and 38-40

The discussion of Gosper et al. and Hommes et al. as applied to claims 13 and 37 applies herein.

Although Gosper et al. teach a method of stretching polypropylene (e.g., a semi-crystalline polymer), Gosper et al. do not discuss the crystallinity of the polypropylene film. However, the polypropylene films having the claimed degrees of crystallinity prior to preheating (i.e., greater than about 1%, greater than about 7%, and greater than about 30%) were well known at the time of the applicant's invention. It would have been obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a polypropylene having the claimed degrees of crystallinity as was well known in the art in the process of Gosper et al. to provide a film having excellent strength and durability. Note further that one of ordinary skill in the art would have recognized that the degree of crystallinity of the film prior to process was a well known result-effective variable, and therefore one of ordinary skill in the art would have obviously determined the optimum degree of crystallinity for the film prior to preheating through routine experimentation based on the desired properties of the film after stretching.

Claims 23, 24, 46, 47, 79 and 89

The discussion of Gosper et al. and Hommes et al. as applied to claims 20, 44, 77 and 87 above applies herein.

Gosper et al. further teach uniformly preheating the polypropylene base sheet to a temperature above about 290°F and preferably to a temperature greater than 300°F (heating the film to from 120 to 165°C; heating the film to from 150 to 165°C) (column 3, lines 20-26).

8. Claims 5, 25, 27, 31, 48, 72, 80, 82 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,551,546 (Gosper et al.) in view of U.S. Patent No. 4,853,602 (Hommes et al.) and the Derwent Abstract of KR 9006301 B (Kim et al.).

Claims 5, 25, 27, 31, 48, 72, 80, 82 and 90

The discussion of Gosper et al. and Hommes et al. as applied to claims 1, 23, 26, 46, 71, 79, 81 and 89 above applies herein.

Although Gosper et al. teach maintaining the edges of the film at least below that of the intermediate web portion, Gosper et al. do not teach actively cooling the opposed edge portions, cooling at least a portion of the film by at least 3°C and forcing cooling air onto the film wherein the cooling air is at least 5°C cooler than the film. However, these limitations would have been obvious in the process of Gosper et al. in view of Kim et al. as discussed further below.

Kim et al. teach a lengthwise drawing process of polyester film sheet wherein the sheet is stretched by passing it through a high temperature air nozzle under differential heating conditions where the central part of the sheet is heated to 125-140°C and the edge part of the sheet is maintained at 120-135°C by applying cooling air in order to obtain the differential heating conditions (actively cooling the opposed edge portions; cooling at least a portion of the film by at least 3°C) (Derwert Abstract). Note that, in order to maintain the 5°C temperature differential at the edges of the film as taught in Kim et al., the cooling air must be at least 5°C cooler than the film. It would have been obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to actively cool the opposed edges of the film in the process of Gosper et al. to the claimed extents as

taught by Kim et al. to assure that a consistent edge temperature differential was maintained through the film stretching.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 2,851,733 (Pangonis et al.), U.S. Patent No. 2,896,262 (Herrmann), U.S. Patent No. 3,132,375 (Koppehele), U.S. Patent No. 3,271,495 (Gronholz), U.S. Patent No. 3,396,216 (Yumoto et al.), U.S. Patent No. 5,575,968 (Seo et al.), U.S. Patent No. 6,303,067 B1 (Wong et al.) and U.S. Patent No. 6,358,457 B1 (Wong et al.) have been cited of interest to show the state of the art at the time the invention was made.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael I. Poe whose telephone number is 703-306-9170. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jan H. Silbaugh can be reached on 703-308-3829. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Michael Poe/mip
March 25, 2002

JAN H. SILBAUGH
SUPERVISORY PATENT EXAMINER
ART UNIT 1732

03/25/02